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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/057,821	01/25/2002	David B. Slater JR.	5308-162	4259

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EXAMINER

BAUMEISTER, BRADLEY W

ART UNIT PAPER NUMBER

2815

DATE MAILED: 03/14/2003

9

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
10/057,821

Applicant(s)
Slater, Jr. et al.

Examiner
B. William Baumeister

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 1 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on Jan 29, 2003
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-123 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☐ Claim(s) _____ is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☒ Claims 1-123 are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
*See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s). _____ 6) ☐ Other: _____

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DETAILED ACTION

Election/Restriction

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1, 14, 30, 33 and 123, drawn to an LED with means for extracting light comprising a plurality of pedestals, classified at least in class 257, subclass 98.
 - IA. Claims 15 and 20, drawn to the embodiment of invention I wherein the pedestals are separated by grooves, classified in class 257, subclass 98 and 622.
 - IB. Claims 22 and 26, drawn to the embodiment of invention I wherein the pedestals are separated by via-holes, classified in class 257, subclass 98.
 - II. Claims 34, 35 and 38, drawn to an LED with means for extracting light comprising an ATON structure (a structure wherein the first substrate face opposite the diode has a smaller surface area than the second substrate face adjacent the diode and wherein the diode emission region is confined within an area that is coextensive with or smaller than that of the first face, see the specification at page 22 lines 29- and e.g., FIG 13), classified in class 257, subclasses 95 and 623.
 - III. Claims 89, 102, 118 and 122, drawn to an LED with means for extracting light comprising a SiC substrate having compensating dopants, classified in class 257, subclasses 102 and 103.

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- IV. Claims 46, 48-62, 64-74, 76, 78-87, drawn to an LED with means for extracting light comprising reflector &/or contact layers of a specified composition or ordering, classified in class 257, subclasses 98, 99 and 745.
- VA. Claim 2, drawn to an LED with means for extracting light comprising a plurality of pedestals (Invention I) in combination with a mounting structure adjacent the diode region.
- VB. Claim 3, drawn to an LED with means for extracting light comprising a plurality of pedestals (Invention I) in combination with a mounting structure adjacent the substrate.
- VIA. Claims 4, 6, 8-10, 12 and 31, drawn to an LED with means for extracting light comprising a plurality of grooved pedestals in combination with a mounting structure adjacent the diode region (Invention VA) and further in combination with a reflector and/or contact/electrode layers of a specified composition or ordering.
- VIB. Claims 5, 7, 11, 13 and 32, drawn to an LED with means for extracting light comprising a plurality of via-hole pedestals in combination with a mounting structure adjacent the diode region (Invention VB) and further in combination with a reflector and/or contact/electrode layers of a specified composition or ordering.
- VII. Claims 17-19, drawn to an LED with means for extracting light comprising a plurality of grooved pedestals (Invention IA) in combination with the grooves possessing a specified orientation of the groove's sidewalls &/or floor.

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- VIII. Claim 16, drawn to an LED with means for extracting light comprising a plurality of grooved pedestals (Invention IA) in combination with the provision of a specified pedestal shape.
- IX. Claim 21, drawn to an LED with means for extracting light comprising a plurality of grooved pedestals (Invention IA) in combination with the provision of a textured substrate surface.
- X. Claim 31, drawn to an LED with means for extracting light comprising a plurality of grooved pedestals (Invention IA) in combination with reflector &/or contact layers of a specified composition or ordering (Invention IV).
- XI. Claims 23-25 and 28, drawn to an LED with means for extracting light comprising a plurality of via-hole pedestals (Invention IB) in combination with the via-holes possessing a specified orientation of the sidewalls &/or floor.
- XII. Claim 27, drawn to an LED with means for extracting light comprising a plurality of via-hole pedestals (Invention IB) in combination with the provision of a textured substrate surface.
- XIII. Claim 32, drawn to an LED with means for extracting light comprising a plurality of via-hole pedestals (Invention IB) in combination with reflector &/or contact layers of a specified composition or ordering (Invention IV).
- XIV. Claim 29, drawn to an LED with means for extracting light comprising a plurality of pedestals (Invention I) in combination with an ATON structure (Invention II).

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- XV. Claim 36, drawn to an LED with means for extracting light comprising an ATON structure (Invention II) in combination with the provision of a textured substrate surface.
- XVI. Claim 37, drawn to an LED with means for extracting light comprising an ATON structure (Invention II) in combination with reflector &/or contact layers of a specified composition or ordering (Invention IV).
- XVII. Claims 39-41, drawn to an LED with means for extracting light comprising an ATON structure (Invention II) in combination with a mounting structure.
- XVIII. Claims 43-45, drawn to an LED with means for extracting light comprising an ATON structure (Invention II) in combination with a mounting structure and further in combination with reflector &/or contact layers of a specified composition or ordering (Invention IV).
- XIX. Claims 47, 63, 75, 77 and 88, drawn to an LED with means for extracting light comprising reflector &/or contact layers of a specified composition or ordering (Invention IV) in combination with a mounting structure.
- XXA. Claim 90, drawn to an LED with means for extracting light comprising a SiC substrate having compensating dopants (Invention III) in combination with a mounting structure adjacent the diode region.
- XXB. Claim 91, drawn to an LED with means for extracting light comprising a SiC substrate having compensating dopants (Invention III) in combination with a mounting structure adjacent the substrate.

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- XXIA. Claims 92, 94, 96-98 and 100, drawn to an LED with means for extracting light comprising a SiC substrate having compensating dopants (Invention III) in combination with a mounting structure adjacent the diode region and further in combination with reflector &/or contact layers of a specified composition or ordering (Invention IV).
- XXIB. Claims 93, 95, 99 and 101, drawn to an LED with means for extracting light comprising a SiC substrate having compensating dopants (Invention III) in combination with a mounting structure adjacent the substrate and further in combination with reflector &/or contact layers of a specified composition or ordering (Invention IV).
- XXII. Claims 103 and 108, drawn to an LED with means for extracting light comprising a plurality of grooved pedestals (Invention IA) in combination with a SiC substrate having compensating dopants (Invention III)
- XXIII. Claims 105-107, drawn to an LED with means for extracting light comprising a plurality of grooved pedestals (Invention IA) in combination with a SiC substrate having compensating dopants (Invention III) and further in combination with the grooves possessing a specified orientation of the groove's sidewalls &/or floor.
- XXIV. Claim 104, drawn to an LED with means for extracting light comprising a plurality of grooved pedestals (Invention IA) in combination with a SiC substrate having compensating dopants (Invention III) and further in combination with the provision of a specified pedestal shape.

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- XXV. Claim 109, drawn to an LED with means for extracting light comprising a plurality of grooved pedestals (Invention IA) in combination with a SiC substrate having compensating dopants (Invention III) and further in combination with the provision of a textured substrate surface.
- XXVI. Claims 119, drawn to an LED with means for extracting light comprising a plurality of grooved pedestals (Invention IA) in combination with a SiC substrate having compensating dopants (Invention III) and further in combination with reflector &/or contact layers of a specified composition or ordering (Invention IV).
- XXVII. Claims 110 and 114, drawn to an LED with means for extracting light comprising a plurality of via-hole pedestals (Invention IB) in combination with a SiC substrate having compensating dopants (Invention III).
- XXVIII. Claims 111-113 and 116, drawn to an LED with means for extracting light comprising a plurality of via-hole pedestals (Invention IB) in combination with a SiC substrate having compensating dopants (Invention III) and further in combination with the via-holes possessing a specified orientation of the sidewalls &/or floor.
- XXIX. Claims 115, drawn to an LED with means for extracting light comprising a plurality of via-hole pedestals (Invention IB) in combination with a SiC substrate having compensating dopants (Invention III) and further in combination with the provision of a textured substrate surface.

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XXX. Claim 120, drawn to an LED with means for extracting light comprising a plurality of via-hole pedestals (Invention IB) in combination with a SiC substrate having compensating dopants (Invention III) and further in combination with reflector &/or contact layers of a specified composition or ordering (Invention IV).

XXXI. Claim 117, drawn to an LED with means for extracting light comprising an ATON structure (Invention II) in combination with a SiC substrate having compensating dopants (Invention III).

2. Inventions I-IV are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, each invention has separate utility such as in an LED wherein the light extracting means employed are only one of the respective four means set forth. See MPEP § 806.05(d).

3. Inventions V-XXXI and I-IV are related as combination and subcombination. Inventions in this relationship are distinct if it can be shown that (1) the combination as claimed does not require the particulars of the subcombination as claimed for patentability, and (2) that the subcombination has utility by itself or in other combinations (MPEP § 806.05(c)). In the instant case, the combination as claimed does not require the particulars of the subcombination as claimed because various combination claims do not require the details of subcombination claims,

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such as the chip having a square perimeter. The subcombination has separate utility such as in an LED that employs less than all of the various recited light extraction means of the combination.

4. Inventions V-XXXI are related as subcombinations disclosed as usable together in a single combination. The subcombinations are distinct from each other if they are shown to be separately usable. In the instant case, each invention has separate utility such as in an LED that only employs only those light extraction means set forth in one invention's claims but precludes all of the light extraction means set forth in other respective inventions. See MPEP § 806.05(d).

5. Because these inventions are distinct for the reasons given above, the inventions have acquired a separate status in the art because of their recognized divergent subject matter as shown by their different classification, the search required for any one invention Group is not required for the other Groups, and/or separate examination would be required, restriction for examination purposes as indicated is proper.

6. This application contains claims directed to the patentably distinct species of the claimed invention set forth above as inventions IA & IB; VA & VB; VIA & VIB; XXA & XXB; XXIA & XXIB; and XXII & XXVII.

If Applicant elects an invention directed towards or including one of these genuses, Applicant is required under 35 U.S.C. 121 to elect a single disclosed species for prosecution on the merits to which the claims shall be restricted if no generic claim is finally held to be allowable. Currently, claims 1, 14, 30, 33 and 123 (Invention I) are generic to Inventions IA and IB.

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Applicant is advised that a reply to this requirement must include an identification of the species that is elected consonant with this requirement, and a listing of all claims readable thereon, including any claims subsequently added. An argument that a claim is allowable or that all claims are generic is considered nonresponsive unless accompanied by an election.

Upon the allowance of a generic claim, applicant will be entitled to consideration of claims to additional species which are written in dependent form or otherwise include all the limitations of an allowed generic claim as provided by 37 CFR 1.141. If claims are added after the election, applicant must indicate which are readable upon the elected species. MPEP § 809.02(a).

Should applicant traverse on the ground that the species are not patentably distinct, applicant should submit evidence or identify such evidence now of record showing the species to be obvious variants or clearly admit on the record that this is the case. In either instance, if the examiner finds one of the inventions unpatentable over the prior art, the evidence or admission may be used in a rejection under 35 U.S.C. 103(a) of the other invention.

7. **Claim 121 link(s) all of inventions I-XXXI.** The restriction requirement among the linked inventions is subject to the nonallowance of the linking claim(s), claim 121. Upon the allowance of the linking claim(s), the restriction requirement as to the linked inventions shall be withdrawn and any claim(s) depending from or otherwise including all the limitations of the allowable linking claim(s) will be entitled to examination in the instant application. Applicant(s) are advised that if any such claim(s) depending from or including all the limitations of the allowable linking claim(s) is/are presented in a continuation or divisional application, the claims of

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the continuation or divisional application may be subject to provisional statutory and/or nonstatutory double patenting rejections over the claims of the instant application. Where a restriction requirement is withdrawn, the provisions of 35 U.S.C. 121 are no longer applicable. *In re Ziegler*, 44 F.2d 1211, 1215, 170 USPQ 129, 131-32 (CCPA 1971). See also MPEP § 804.01.

8. Applicant is advised that the reply to this requirement to be complete must include an election of the invention to be examined even though the requirement be traversed (37 CFR 1.143).

9. Applicant is reminded that upon the cancellation of claims to a non-elected invention, the inventorship must be amended in compliance with 37 CFR 1.48(b) if one or more of the currently named inventors is no longer an inventor of at least one claim remaining in the application. Any amendment of inventorship must be accompanied by a request under 37 CFR 1.48(b) and by the fee required under 37 CFR 1.17(i).

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INFORMATION ON HOW TO CONTACT THE USPTO

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to the examiner, **B. William Baumeister**, at (703) 306-9165. The examiner can normally be reached Monday through Friday, 8:30 a.m. to 5:00 p.m. If the Examiner is not available, the Examiner's supervisor, Mr. Eddie Lee, can be reached at (703) 308-1690. Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-0956.

A handwritten signature in black ink, appearing to read 'B. William Baumeister', with a stylized, looping flourish at the end.

B. William Baumeister

Patent Examiner, Art Unit 2815

March 13, 2003

Application/Control Number: 10/057,821

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RESTRICTION APPENDIX

Linking Claim		121
I.	pedestals	1, 14, 30, 33, 123
	IA. = grooves	15, 20
	IB = vias	22, 26
II.	ATON	34, 35, 38
III.	SiC w/ compensating dopants	89, 102, 118, 122
IV.	Reflector/electrode structure	46, 48-62, 64-74, 76, 78-87
VA.	I + mount adjacent diode	2
VB.	I + mount adjacent substrate	3
VIA.	VA + IV	4, 6, 8-10, 12, 31
VIB.	VB + IV	5, 7, 11, 13, 32
VII.	IA + orientation of groove s/w &/or floor	17-19
VIII.	IA + shape of pedestal	16
IX.	IA + textured surface	21
X.	IA + electrode structure	31
XI.	IB + orientation of via s/w &/or floor	23-25, 28
XII.	IB + textured surface	27
XIII.	IB + electrode structure	32
XIV.	pedestal (I) + ATON (II)	29
XV.	II + textured	36
XVI.	II + electrode (IV)	37 62, 64-74, 76, 78-87
XVII.	II + mount	39-41
XVIII.	II + mount + electrode (IV)	43-45
XIX.	IV + mount	47, 63, 75, 77, 88
XXA.	III + mount adj diode	90
XXB.	III + mount adj s/s	91
XXIA.	III + diode mount + contact/reflector	92, 94, 96-98, 100
XXIB.	III + s/s mount + contact/reflector	93, 95, 99, 101
XXII.	IA + III	103, 108
XXIII.	IA + III + orient. of groove s/w &/or floor	105-107
XXIV.	IA + III + shape of pedestal	104
XXV.	IA + III + textured surface	109
XXVI.	IA + III + electrode (IV)	119
XXVII.	IB + III	110, 114
XXVIII.	IB + III + orientation of via s/w &/or floor	111-113, 116
XXIX.	IB + III + textured surface	115
XXX.	IB + III + electrode	120
XXXI.	II + III	117